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5 September 1967

MEMORANDUM FOR RECORD

SUBJECT: PSAC Review of MOL Program

The Reconnaissance Panel of PSAC conducted a review of the MOL Program on 29 August 1967. The meeting took place at the offices of Dr. Land, Chairman of the Panel, in Cambridge, Mass. A list of members of the Panel in attendance is shown in Attachment #1.

Representing the MOL and Gambit programs were various members of the DoD, Air Force, Aerospace Corporation, EK and GE. A list of attendees is shown in Attachment #2.

After a brief introduction by General Stewart, the program proceeded according to the Agenda shown in Attachment #3. The presentation material used during the review is available in SAFSL under separate cover.

The briefing on Gambit-3 was received with a considerable amount of discussion. Although it was scheduled to be completed in one hour and fifteen minutes, the Panel took more than two and one-half hours for the subject. The Panel was obviously displeased with the inability of the program to reach its expected goal of [REDACTED] resolution on the first series of flights. The problems encountered by that program were traceable to the inability of the contractor to properly manufacture the stereo mirror, to test the optical quality during manufacture, and consequently to establish a well-defined plane of best focus. Although EK indicated that they expect to reach the required system performance within twenty flights, Dr. Land stated that at this stage he had little confidence in EK reaching that goal. He didn't see any indications that they knew how to get there. This impression was slowly dispelled as the briefing progressed and the testing capabilities offered by the Dorian program were more thoroughly understood.

The highlight of the Panel discussion was EK's demonstration of the plans and current activities in expanding their test facilities. Near the end of the review, when the subject

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Garwin to Tennant: Can man track at light levels lower than the IVS? What is the residual IMC improvement provided by the IVS? How long does it take to capture a target while the structure is still in a settling process? The spatial frequency of the IVS which is listed at a minimum of 10 ft. and a maximum of 500 ft. is marginal at best. Isn't there a double focus created by the presence of the pellicle? Isn't the counter-rolling of the spacecraft in reaction to mirror roll causing a rotation of the image on the film which is not compensated?

Land to Tennant: In reference to Dr. Garwin's question on spatial frequency, the Panel would like to note that it is unhappy about the relationship of the IVS time constant and spatial frequency resolution. Can man see activity at low contrast? Have you simulated low contrast viewing conditions? Why don't you have a small TV in the ATS eyepiece to enhance contrast? Couldn't we add a delayed phosphor disc in one eyepiece to provide stereo viewing through the ATS?

Shea to Bernstein: Can't we use communications satellites to aid in diagnostic procedures and aid verbal reporting?

Garwin to Bernstein: What kind of devices does the astronaut have on board for aiding in the diagnostic process? He should have a lot of simple instruments -- like microscopes and viewers. Is it possible to have quartz elements in the Ross corrector? It would be a shame to miss a supernova while a large telescope like Dorian is in space.

Land to Stewart: It is most important that all effort be made to assure achieving [redacted] resolution on the first flight of MOL. Certainly MOL should not be launched with a known optical quality deficiency just to satisfy a present schedule. (Gen Stewart and Mr. Kirk agreed).

Post Script: A subsequent discussion with Dr. Steininger revealed the following comments or opinions the Panel had after the briefers departed:

1. Dr. Purcell had additional ideas about Zero-G testing and would like to get in touch with someone from the program to discuss them. (Dr. Leonard has been requested to talk to Dr. Purcell).

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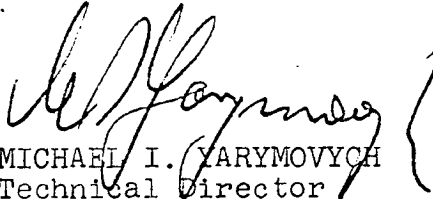
2. Dr. Steininger would like to be informed by a brief note to be written a few months from now on the status of the image-enhancing device suggested by Dr. Land and the Zero-G test concept suggested by Dr. Purcell.

3. The Panel has some doubt that MOL will, indeed, be able to produce [REDACTED] resolution on the first flight.

4. The Panel is disappointed at the apparent lack of imagination that has so far been shown in using man in a diagnostic role. It is Dr. Steininger's opinion that, if pressed hard, Dr. Land would still maintain that man in MOL is not worth the cost.

5. The Panel is disappointed with the deletion of the Readout System since this action greatly reduces the utility and flexibility of the manned mode.

6. According to Dr. Steininger, Dr. Land will not write a report to Dr. Horning concerning the results of this review as he had done in the past.


MICHAEL I. YARYMOVYCH
Technical Director
MOL Program

3 Attachments:
a/s

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RECONNAISSANCE PANEL OF PSAC
MEMBERS IN ATTENDANCE

Dr. Edwin H. Land ----- (Chairman)
Dr. Edward M. Purcell
Dr. Sydney Drell
Dr. Marvin L. Goldberger
Dr. Richard L. Garwin
Dr. James Gilbert Baker
Dr. Donald P. Ling
Dr. Allen E. Puckett
Dr. Joseph Shea
Dr. Donald H. Steininger- (Executive Secretary)

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Atch # 1

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ATTENDANCE LIST FOR PSAC

1. SAFSL
Gen Stewart
Gen Bleymaier
Dr. Yarymovych
2. SAFSS/SAFSP
Gen R. Berg
Cdr Robert Geiger
Col Bernard Quinn
3. DDR&E
Dr. Fink
Mr. Kirk
Mr. Koslov
4. Aerospace
Dr. Leonard
Mr. Samuel Tennant
Mr. Harry Bernstein
Dr. Donovan
5. EK
Herman Wagershauser
Arthur B. Simmons
John Sewell
Stuart Lambers
Charles Spoelhof
6. GE
Richard Passman
John Gispan
George Stocking
A. G. Steinmayer

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PSAC REVIEW OF MOL PROGRAM

29 AUGUST 1967

AGENDA

1. Review of Advanced Gambit Performance
 - a. Flight Results Col B. Quinn
(SAFSP)
 - b. Problems and Solutions Mr. S. Lambers
(EK)
2. Advanced Technology Cdr Geiger
(SAFSP)
 - a. Cer-Vit and ULE Status
 - b. High Speed Polishing Techniques
 - c. Large Advanced Optics
3. Program Status Summary Gen Stewart
(SAFSL)
 - a. Program Overview
 - b. Identification of System
Segments
 - c. Contractors' Progress
 - d. Master Summary Schedule
4. Payload Status Review
 - a. Optical System Review C. Spoelhof
(EK)
 - b. Work in Progress J. Sewell
(EK)
 - c. Testing and Manufacturing
Techniques

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Atch #3

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- d. Testing and Manufacturing Facilities
- e. Subsystems and Components
- 5. Tracking Mirror Control and Other Payload Systems
 - a. Tracking Mirror Bearing Desing Test, Validation and Sub-system Integration R. Passman (GE)
 - b. Image Velocity Sensor S. Tennant (Aerospace)
 - c. Acquisition and Tracking Scope
- 6. Utilization of Man in Development Phase M. Bernstein (Aerospace)
 - a. Manned Diagnostic Techniques
 - b. Active Target Selection
 - c. Results of Static Simulations
 - d. Aircraft Simulation

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